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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/682,363	08/24/2001	Anthony C. Zuppero	22122878-6	9527
26453	7590	11/15/2005	EXAMINER	
BAKER & MCKENZIE LLP 805 THIRD AVENUE - 29TH FLOOR NEW YORK, NY 10022			DIAMOND, ALAN D	
			ART UNIT	PAPER NUMBER
			1753	
DATE MAILED: 11/15/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/682,363

Applicant(s)

ZUPPERO ET AL.

Examiner

Alan Diamond

Art Unit

1753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 23 May 2005 and 02 September 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-48 is/are pending in the application.
- 4a) Of the above claim(s) 1,3-19 and 47 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 20-46 and 48 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 October 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election of Group II, claims 20-46 and 48 in the reply filed on September 2, 2005 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).
2. Claims 1, 3-19, and 47 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on September 2, 2005.

### ***Comments***

3. The obviousness-type double patenting rejections over U.S. Patents 6,678,305 and 6,700,056 are now moot in view of the fact that there are only method claims in said patents.
4. The provisional obviousness-type double patenting rejection over copending application Serial No. 10/052,004 is now moot in view of the fact that there are only method claims in said copending application.

### ***Claim Objections***

5. Claims 20 and 48 are objected to because of the following informalities: In claim 20, at line 6, and in claim 48, at line 7, the word "causes" should be changed to "cause". Appropriate correction is required.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 20-46 and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fletcher et al (U.S. Patent 4,045,359) in view of Shinohara et al (U.S. Patent 6,172,427).

Fletcher et al extracts excess energy from an unstable, vibrationally excited species by contacting the species with the surface of a finely divided solid (see abstract; col. 2, lines 3-11; col. 2, line 67 through col. 3, line 16; and, col. 4, lines 8-22). For example, using the apparatus of Figures 1 or 2, gas reactants A and B absorb energy to form photonicly excited species  $A^*$  and/or  $B^*$ , which in turn react to form an unstable excited reactant  $C^*$  (see the paragraph bridging cols. 2 and 3).  $C^*$  is stabilized by transient contact with the passive surface of a finely divided particle (12) during which excess energy is transferred to the surface (see col. 3, lines 2-5). Likewise, said surface can also absorb energy from  $B^*$  (see col. 3, line 9). The reactants are excited using a laser light source (col. 2, lines 45-46 and col. 3, lines 17-32), which can supply pulses of energy in view of the fact that the laser can be discontinuous (col. 2, lines 47-50). Fletcher et al's photon-induced reaction can be used for catalytic conversion in automobiles with the advantage that platinum is not necessary (see col. 4, lines

8-22). Fletcher et al teaches the limitations of the instant claims other than the difference which is discussed below.

Fletcher et al does not specifically teach extracting a net excess of useful work. Shinohara et al teaches that a thermoelectric device can be fitted to a catalytic converter to generate electricity from heat (see col. 6, lines 13-40). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used a thermoelectric device fitted on a catalytic converter that uses the photon-induced reaction of Fletcher et al because a thermoelectric device can be fitted to a catalytic converter to generate electricity from heat.

8. Claims 20-46 and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Few et al (U.S. Patent 5,404,712) in view of JP 2-264101 (herein referred to as JP '101).

Few et al teaches an apparatus for igniting an air/fuel spray for a gas turbine engine, the apparatus comprising an emitter that is the opening in the combustion chamber wall (22), wherein pulsed laser beam (20) is directed into the chamber, and wherein the instant reaction surface of the emitter corresponds to the surfaces of said wall (22) at said opening (see Figure 1; and col. 3, line 61 through col. 5, line 65). The inside of the chamber (22) corresponds to the instant reaction region and surrounds said opening. Pulses of radiation are supplied to the fuel/air mixture in the chamber so as to generate free electrons and develop a plasma, and the free electrons are accelerated to hot electrons which extend over a large area of the combustion chamber (22) (see abstract;

and col. 4, line 61 through col. 5, line 14). Few et al teaches the limitations of the instant claims, other than the difference which is discussed below.

Few et al does not specifically teach the instant collector near the reaction region. JP '101 teaches the use of thermoelectric power generating elements (17) on the inside surface of a combustion chamber for a gas turbine engine (see the entire JP '101 document). The use of the thermoelectric power generating elements provides the advantages of enhanced thermal efficiency and, of course, the generation of electricity. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided thermoelectric power generating elements on the inside walls of Few et al's combustion chamber because the use of the thermoelectric power generating elements provides the advantages of enhanced thermal efficiency and, of course, the generation of electricity, as taught by JP '101.

### ***Double Patenting***

9. Applicant is advised that should claim 20 be found allowable, claim 48 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof.

When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k). The only difference between claim 20 and claim 48 is that in the preamble, claim 20 recites that the device is "for generating energy" whereas claim 48 recites that the device is for "extracting a net excess of useful work". The actual components of the device

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are the same in claims 20 and 48. The recitations "for generating energy" and "for extracting a net excess of useful work" do not change the scope of the recited device or components thereof.

10. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

11. Claims 20-46 and 48 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 8-16 of U.S. Patent No. 6,114,620. Although the conflicting claims are not identical, they are not patentably distinct from each other because the stimulation and initiation of reaction in pulses would have been within the skill of an artisan.

12. Claims 20-46 and 48 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-6 of U.S. Patent No. 6,222,116. Although the conflicting claims are not identical, they are not patentably distinct from each other because the stimulation and initiation of reaction in pulses would have been within the skill of an artisan.

13. Claims 20-46 and 48 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-26 of U.S. Patent No. 6,268,560. Although the conflicting claims are not identical, they are not patentably distinct from each other because the stimulation and initiation of reaction in pulses would have been within the skill of an artisan.

14. Claims 20-46 and 48 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 14-37 of U.S. Patent No. 6,649,823. Although the conflicting claims are not identical, they are not patentably distinct from each other because the stimulation and initiation of reaction in pulses would have been within the skill of an artisan.

15. Claims 20-46 and 48 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-40 of U.S. Patent No. 6,944,202. Although the conflicting claims are not identical, they are not patentably distinct from each other because the stimulation and initiation of reaction in pulses would have been within the skill of an artisan.

16. Claims 20-46 and 48 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-64, 98-101, and 131-143 of U.S. Patent No. 6,916,451. Although the conflicting claims are not identical, they are not patentably distinct from each other because the stimulation and initiation of reaction in pulses would have been within the skill of an artisan.

17. Claims 20-46 and 48 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims



1-19 of copending Application No. 10/185,086. Although the conflicting claims are not identical, they are not patentably distinct from each other because the stimulation and initiation of reaction in pulses would have been within the skill of an artisan.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

### ***Response to Arguments***

18. Applicant's arguments filed May 23, 2005 have been fully considered but they are not persuasive.

Applicant argues that Fletcher et al and Shinohara et al do not disclose, suggest, or teach a device that creates "hot electrons in pulses" and "converts kinetic energy of the hot electrons into useful work" as claimed in claims 20 and 48. However, this argument is not deemed to be persuasive because Fletcher et al's reactants are excited using a laser light source (col. 2, lines 45-46 and col. 3, lines 17-32), which can supply pulses of energy in view of the fact that the laser can be discontinuous (col. 2, lines 47-50). Gas reactants A and B absorb energy to form photonicly excited species  $A^*$  and/or  $B^*$ , which in turn react to form an unstable excited reactant  $C^*$  (see the paragraph bridging cols. 2 and 3).  $C^*$  is stabilized by transient contact with the passive surface of a finely divided particle (12) during which excess energy is transferred to the surface (see col. 3, lines 2-5). It is the Examiner's position that Fletcher et al inherently creates the instant hot electrons. The conversion of kinetic energy into useful work results when a thermoelectric device, as taught by Shinohara et al, that is fitted on a catalytic

converter that uses the photon-induced reaction of Fletcher et al, converts heat to electricity.

Applicant argues that Fletcher et al fails to disclose vibrational energy transfer to hot electron energy. This argument is not deemed to be persuasive because applicant is arguing a limitation that is not in the claims. In any event, as noted in the preceding paragraph, Fletcher et al does inherently create hot electrons.

Applicant argues that Fletcher teaches away from converting energy to useful work "since Fletcher et al expressly provides that the main function of the particle is to act as an energy sink" and that the "main purpose of Fletcher et al's device is to discard excess energy rather than collect it as useful work."

However this argument is not deemed to be persuasive because while it is true that Fletcher et al teaches that the main function of its particles is to act as an energy sink (see col. 2, lines 16-20), Fletcher et al does not teach away from using the heat collected by the particles to generate electricity. The Examiner maintains that the motivation to combine Fletcher et al with Shinohara et al is that it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used a thermoelectric device fitted on a catalytic converter that uses the photon-induced reaction of Fletcher et al because a thermoelectric device can be fitted to a catalytic converter to generate electricity from heat.

### ***Conclusion***

19. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patent Application Publication 2005/0189011 is hereby made of record

20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alan Diamond whose telephone number is 571-272-1338. The examiner can normally be reached on Monday through Friday, 5:30 a.m. to 2:00 p.m. ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'Alan Diamond', with a stylized flourish at the end.

Alan Diamond  
Primary Examiner  
Art Unit 1753

Alan Diamond  
November 9, 2005